

Preface

This manual describes how to install and use the PCI Express Gigabit Ethernet Adapter. This PCI Express Gigabit Ethernet Adapter allows options of the RJ-45 or different fiber connections (such as connector types and segment distance).

To get the most out of this manual, you should have an understanding of Ethernet networking concepts.

In this manual, you will find:

- Introduction on PCI Express Gigabit Ethernet Adapter
- Product features
- LEDs functions
- Hardware installation
- Software installation
- Specifications

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Product Overview

Package Contents

When you unpack the product package, you shall find the items listed below. Please inspect the contents, and report any apparent damage or missing items immediately to our authorized reseller.

- ✓ *PCI Express Gigabit Ethernet Adapter*
- ✓ *User's Manual*
- ✓ *Software Driver*

Product Features

- Provide
 - One 10/100/1000Base-TX port, or
 - One 1000Base-SX/LX port
- RJ-45 connection:
 - Auto-negotiate 10/100/1000Mbps and full/half duplex
 - Auto MDI/MDIX
 - Compliant with IEEE 802.3 10Base-T, IEEE 802.3u 100Base-TX, IEEE 802.3ab 1000Base-T
- Fiber connections:
 - SC connector for multi-mode and single-mode
 - Compliant with IEEE 802.3z 1000Base-SX/LX
- PCI Express 1.0a compliant
- Supports Microsoft NDIS5 Checksum Offload (IP, TCP, UDP) and Largesend Offload
- Advanced Configuration Power Management Interface (ACPI) 2.0
- 10/100/1000Base-TX port supports Wake-on-LAN remote wake-up
- Supports IEEE802.1Q VLAN Tagging
- Supports IEEE802.1p Layer 2 Priority Encoding
- RFC 1157 SNMP v1 compliant
- Preboot Execution Environment (PXE) 2.1
- Cable diagnostic utility
- Supports Jumbo Frame up to 7K (Vista) and 4K (XP and other OS)
- Supports PCI Message Signaled Interrupt (MSI)
- IEEE 802.3x full duplex flow control
- 48K Bytes buffer memory
- Two LEDs: LNK (link) (Green), ACT (activity) (Yellow)
- 0°C to 45°C (32°F to 113°F) operating temperature range

Driver Support

The Adapter supports a wide range of drivers for commonly used network operating systems:

- Microsoft Windows 98SE, ME, 2000, XP (32/64-bit), 2003, Vista (32/64-bit)
- FreeBSD 5.4, 6.0
- Linux driver for kernel 2.4.x, 2.6.x (Support x86, x64)
- MacOS 10.4, 10.5 on Intel-based Mac computer
- NDIS2 driver for DOS (Support MSClient, Lantastic, Lanman, Norton Ghost)
- Novell client for DOS (ODI driver)
- Novell Netware Server driver (Support OS 4.x, 5.x, 6.x)
- PXE ROM code
- SCO Open Server 6.0
- SCO Unix 5.0.6, 5.0.7
- Setup diagnostic program (DOS program)
- Unix Ware 7.1.3, 7.1.4

LEDs

- **LNK** Link
- **ACT** Activity

LEDs	Status	Indication
LNK (Green)	Steady	A valid network connection established. LNK stands for LINK.
	Off	No network connection.
ACT (Yellow)	Flashing	Transmitting or receiving data. ACT stands for ACTIVITY.
	Off	No activity.

Hardware Installation

Installing Ethernet Adapter into PCI Express slot

Step 1: Turn off the power to the PC.

Step 2: Remove any metal decorations from your hands and wrists.

Step 3: Remove the cover from your PC.

Step 4: Locate an empty bus mastering PCI Express slot and remove the corresponding backplate. Save the screw for use in Step 6.

Step 5: Carefully insert the PCI Express Gigabit Ethernet Adapter into the chosen slot and press firmly with proper push to ensure it is fully seated in the slot.

Step 6: Secure the PCI Express Gigabit Ethernet Adapter with the screw you saved in step 4.

Step 7: Replace the PC cover.

Step 8: Proceed to “Connecting to Your Network” section.

Connecting to Your Network

PCI Express Gigabit Ethernet Adapter

This section describes how to connect the PCI Express Gigabit Ethernet Adapter to a network.

<Note>

You must connect the PCI Express Gigabit Ethernet Adapter to the network before installing the network driver.

- Step 1:** Prepare a network cable with corresponding connectors for the two end devices, one end to the PCI Express Gigabit Ethernet Adapter and the other to a network switch.
- Step 2:** When the cable is properly connected to the devices, turn on the power to the PC.
- Step 3:** Check the LNK (Link) LED. The LED will come on when the PCI Express Gigabit Ethernet Adapter is receiving a good link signal from the connected device, a switch.
- Step 4:** Proceed to next section for installing the network driver.

PCI Express Fiber Gigabit Ethernet Adapter

This section describes how to connect the PCI Express Fiber Gigabit Ethernet Adapter to a 1000 Mbps fiber-based Ethernet network, which contributes to its optimal performance.

<Note>

You must connect the PCI Express Fiber Gigabit Ethernet Adapter to the network before installing the network driver.

- Step 1:** Remove the protective covers from the PCI Express Fiber Gigabit Ethernet Adapter's connector.
- Step 2:** Prepare a network cable with corresponding connectors for the two end devices, one end to the PCI Express Fiber Gigabit Ethernet Adapter and the other to a 1000Mbps fiber port on the network switch.

Step 3: Connect the network cable to the connector on the PCI Express Fiber Gigabit Ethernet Adapter. This network cable consists of two individual cables: one for 'transmission (TX)', and the other for 'reception (RX)'.

Step 4: Connect the other end of the network cable to a 1000BASE-SX/LX switch.

<Note>

- i. Insert the cable that is connected to the transmit (TX) connector on the PCI Express Fiber Gigabit Ethernet Adapter into the receive (RX) connector on the network switch.
- ii. Insert the cable that is connected to the receive (RX) connector on the PCI Express Fiber Gigabit Ethernet Adapter into the transmit (TX) connector on the network switch.

Step 5: When the cable is properly connected to two end devices, turn on the power to the PC.

Step 6: Check the LNK (Link) LED. The LED will come on when the PCI Express Fiber Gigabit Ethernet Adapter is receiving a good link signal from the connected device, a switch.

Step 7: Proceed to next section for installing the network driver.

Cabling Requirements

For connector type, cabling requirements, and maximum segment distance when connecting the PCI Express Gigabit Ethernet Adapter to your network, please refer to the following table.

Speed	Connector	Port Speed Half/Full Duplex	Cable	Distance
10Base-T	RJ-45	10/20 Mbps	Category 3, 4, or 5 UTP/STP	100 meters
100Base-TX	RJ-45	100/200 Mbps	Category 5 UTP/STP	100 meters
1000Base-T	RJ-45	2000 Mbps	Category 5 or 5e UTP/STP	100 meters

Connector Type on Fiber Adapter	Wavelength of 850nm Fiber Optic required	Maximum Distance (* full-duplex)
SC	Multi-mode, 62/125 μ m	550 m

Connector Type on Fiber Adapter	Wavelength of 1310nm Fiber Optic required	Maximum Distance (* full-duplex)
SC	Single-mode, 10/125 μ m	10 km
SC	Single-mode, 10/125 μ m	20 km
SC	Single-mode, 10/125 μ m	50 km

<Note>

The maximum node-to-node network distance is in full-duplex operation.

Driver Installation

1. Turn on the computer after plugging PCI Express Gigabit Ethernet Adapter to PCI Express slot. The “Found New Hardware Wizard” window pop up.



2. Select “Install from a list or specific location (Advanced)” and click “Next” to continue.



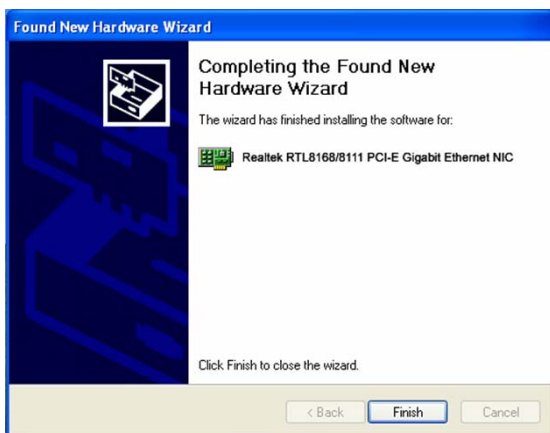
3. Select “Search for the best driver in these locations.” and then select “Include this location in the search:”. Click “Browse” to specify the driver location and click “Next” to continue.



4. Select “Yes, connect and search for the software on the internet” and click “Next” to continue.



5. Click “Finish” to complete the driver installation.

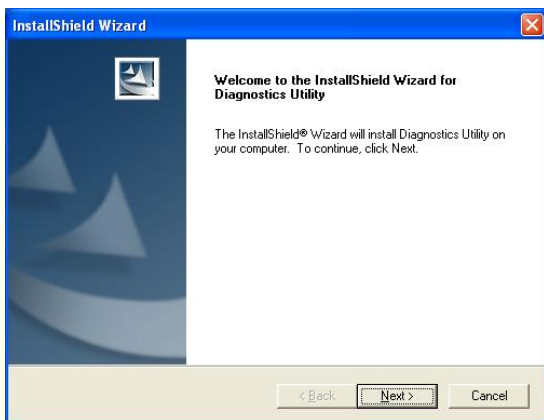


Diagnostics Utility

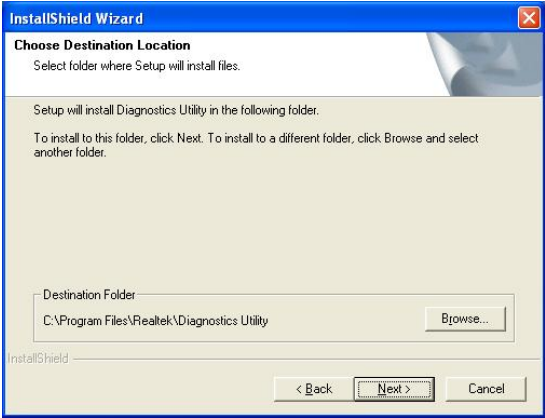
The Diagnostics Utility is a Windows platform application. It provides General information, VLAN ID settings, Driver property settings, Diagnostics function, Statistics, Cable analysis, and Wake On LAN function.

Diagnostics Utility Installation

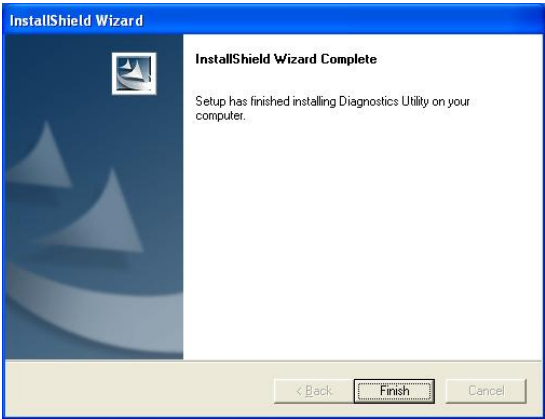
1. Look for the file named “Install2KXP.exe” on the installation CD-ROM. Double-click on it to start the installation for the Diagnostics Utility.



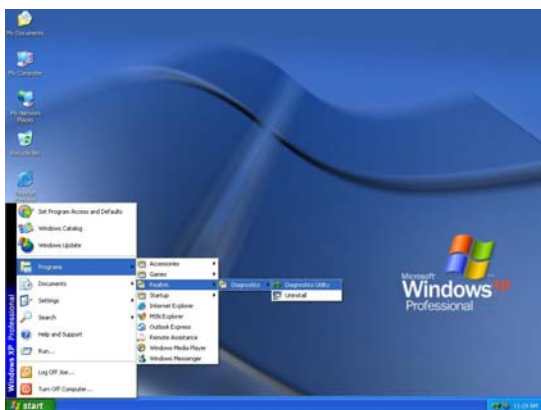
2. Click **Next** to install to Destination Folder C:\Program Files\Realtek\Diagnostics Utility. Otherwise click on **Browse** to choose an alternate location.



3. After Diagnostics Utility has been successfully installed, click on **Finish**.



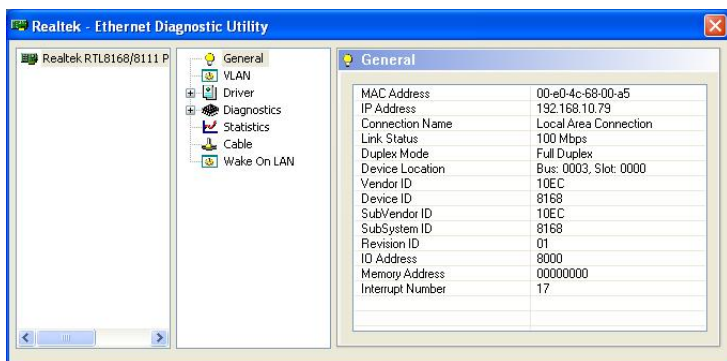
4. Simply click **Diagnostics Utility** under **Programs→Realtek→Diagnostics** to launch the Diagnostics Utility.



Diagnostics Utility Configuration

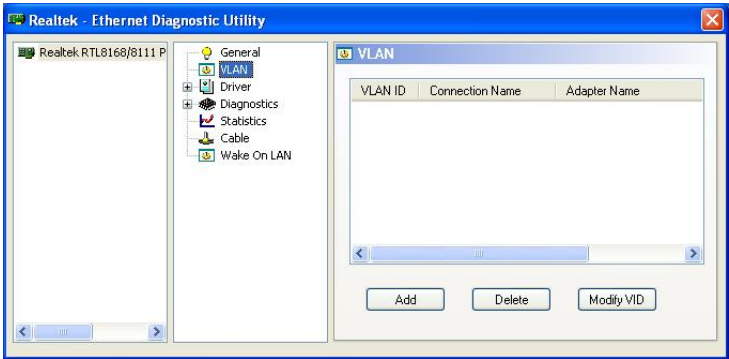
General

This page displays general information about the selected network adapter.



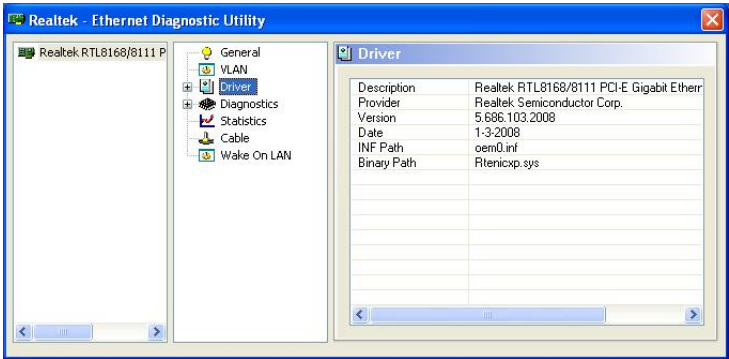
VLAN

This page shows information about VLANs on current selected network adapter. User can add or remove VLAN here. Besides, user can change the VLAN ID of existing VLAN.



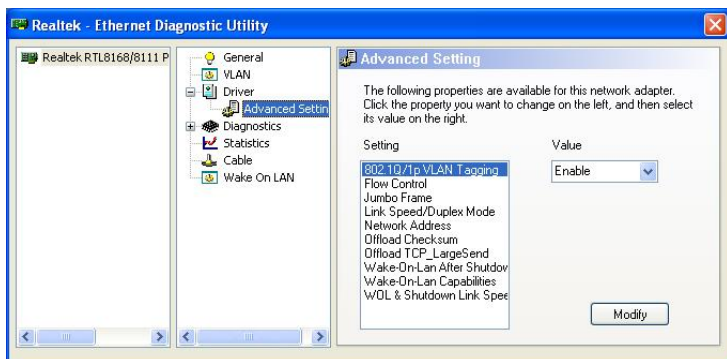
Driver

This page displays driver information of the selected network adapter.



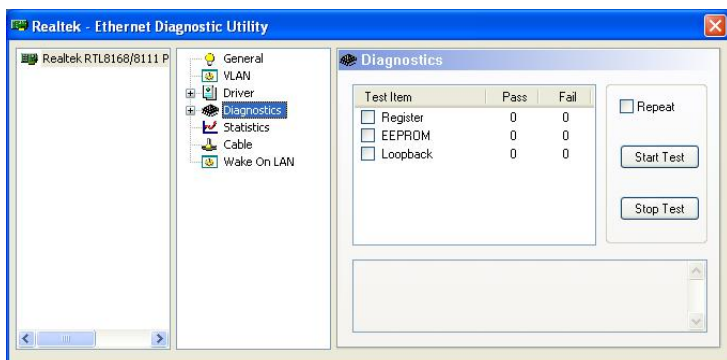
Advanced Setting

This page displays working parameters for this network adapter. User can modify these parameters here. For Windows 98SE and ME, it needs to reboot to change the parameters.



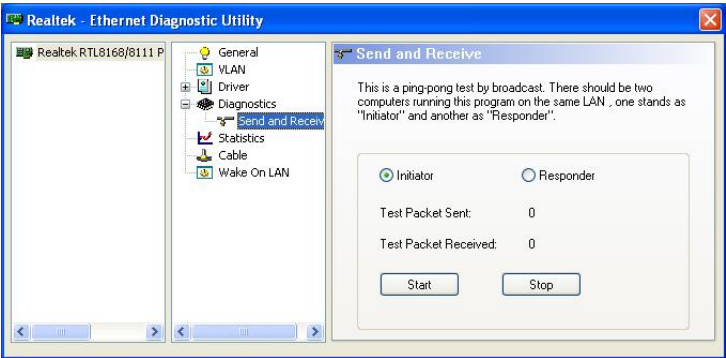
Diagnostics

This page performs hardware tests on selected network adapter.



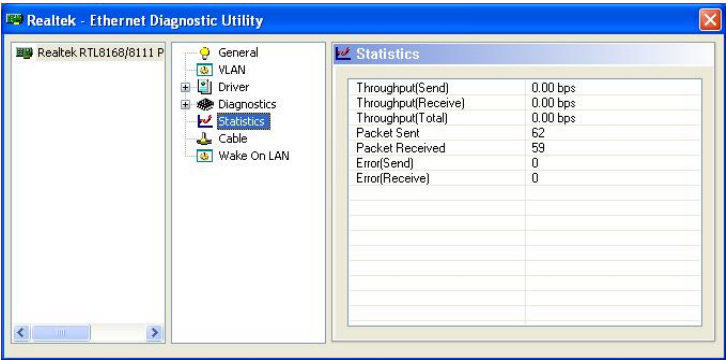
Send and Receive

Two PCs with adapters in the same LAN can perform send & receive experiment with broadcast packet here.



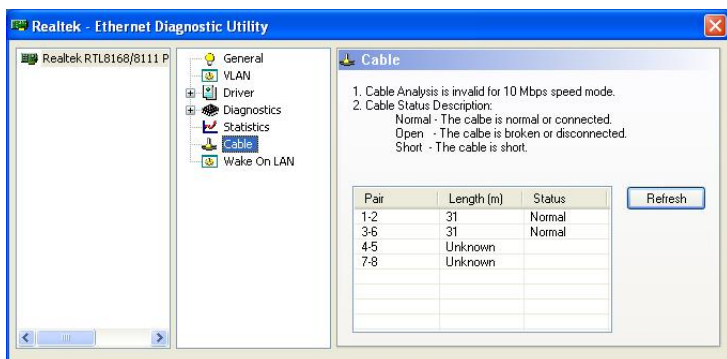
Statistics

This page show statistics of current selected network adapter, including throughput, number of good packet sent / received, and number of error packet sent / received.



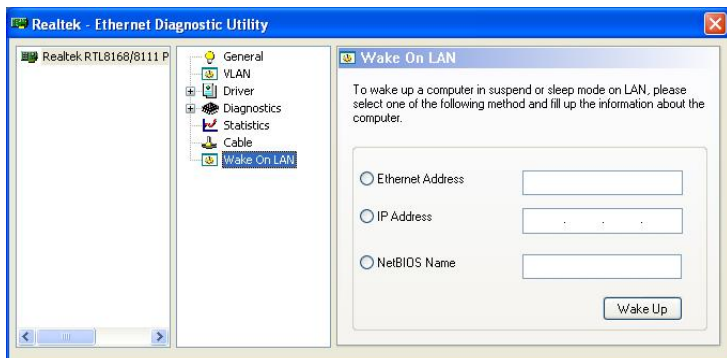
Cable

This page estimates the length of the plugged cable.



Wake On LAN

This page provides three ways for user to wake up a PC in stand by or hibernate mode via selected network adapter. A computer can be waked up only if related configurations in BIOS and the network adapter are enabled.



Specifications

Applicable Standards	10/100/1000Base-TX: IEEE802.3 10Base-T IEEE802.3u 100Base-TX IEEE802.3ab 1000Base-T 1000Base-SX/LX: IEEE802.3z 1000Base-SX/LX
Speed	10/100/1000Base-TX: 20Mbps full-duplex, 10Mbps half-duplex 200Mbps full-duplex, 100Mbps half-duplex 2000Mbps full-duplex 1000Base-SX/LX: 2000Mbps full-duplex
Performance	14,880pps for 10Mbps 148,810pps for 100Mbps 1,488,100pps for 1000Mbps
Cable	10Base-T: Category 3, 4, or 5 UTP/STP 100Base-TX: Category 5 UTP/STP 1000Base-T: Category 5 or 5e UTP/STP 62/125µm multi-mode fiber-optic cable, up to 550 m, wavelength 850nm 10/125µm single-mode fiber-optic cable, up to 50 km, wavelength 1310nm
LED Indicators	LNK (Link) (Green) ACT (Activity) (Yellow)
Dimensions	109mm (L) x 83mm (W) (4.29" (L) x 3.27" (W))
Net Weight	80g (0.18lb.) approx.
Power Consumption	3.3VDC, 697mA, 2.3W Max.
Operating Temperature	0°C to 45° C (32°F to 113°F)
Storage Temperature	-10°C to 70°C (14°F to 158°F)
Humidity	5%-95% non-condensing
Emissions	FCC part 15 Class B, CE Mark Class B